Mid-gestation intra-amniotic infection with *Ureaplasma parvum* is resolved within spiny mice (*Acomys cahirinus)* by term delivery: but caused chronic infection of fetal lungs and placentae

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Background: *Ureaplasma* species in amniotic fluid at the time of second-trimester amniocentesis increases the risk of preterm birth, but most affected pregnancies continue to term (Gerber *et al.* J Infect Dis 2003). We aimed to model intra-amniotic (IA) ureaplasma infection in spiny mice, a species with a relatively long gestation (39 days) that allows investigation of the disposition and possible clearance of ureaplasmas in the feto-placental compartment.

Method: Pregnant spiny mice received IA injections of *U. parvum* serovar 6 (10µL, $1x10^4$ colony-forming-units in PBS) or 10B media (10µL; control) at 20 days (d) of gestation (term=39d). At 37d fetuses (n=3 ureaplasma, n=4 control) were surgically delivered and tissues were collected for; bacterial culture, ureaplasma *mba* and *urease* gene expression by PCR, tissue WBC counts and indirect fluorescent antibody (IFA) staining using anti-ureaplasma serovar 6 (rabbit) antiserum. Maternal and fetal plasma IgG was measured by Western blot.

Results: Ureaplasmas were not detected by culture or PCR in fetal or maternal tissues but were visualized by IFA within placental and fetal lung tissues, in association with inflammatory changes and elevated WBC counts ($p<0.0001$). Anti-ureaplasma IgG was detected in maternal (2/2 tested) and fetal (1/2 tested) plasma but not in controls (0/3).

Conclusions: IA injection of ureaplasmas in mid-gestation spiny mice caused persistent fetal lung and placental infection even though ureaplasmas were undetectable using standard culture or PCR techniques. This is consistent with resolution of IA infection, which may occur in human pregnancies that continue to term despite detection of ureaplasmas in mid-gestation.